

## CLAIMS

### **What is claimed is:**

1. A method for storage of non-sequential data, comprising:  
coding the non-sequential data to a coding pattern, the coding pattern including at least one sequence with symbols which have the characteristic that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines a position of the subsequence in the sequence; and  
reproducing the coding pattern on a product.
2. The method of claim 1 further comprising:  
converting the non-sequential data into a set of data values having a pattern arranged so as to comprise sequence portions of said at least one sequence in a coding pattern, said sequence portions being at least of the same magnitude as the subsequences of a predetermined magnitude, so that each of the data values is coded by a group each of at least two sequence portions in the coding pattern.
3. The method of claim 1 further comprising:  
converting the non-sequential data into a set of data values having a pattern arranged so as to comprise sequence portions of said at least one sequence in a coding pattern, said sequence portions being of the same magnitude as the

subsequences of a predetermined magnitude, so that each of the data values is coded by one sequence portion in the coding pattern.

4. The method of claim 2, wherein the non-sequential data is coded with only one sequence, wherein the position of a subsequence in the sequences constitutes a sequence value, and wherein a relationship between the sequence values from different sequence portions defines the data values.

5. The method of claim 4, wherein each of the data values is defined by a difference between the sequence values for two subsequences from different sequence portions.

6. The method of claim 5, wherein the sequence portions are juxtaposed in the coding pattern comprising a matrix in such manner that each of the data values is defined by a difference between the sequence values of two adjoining subsequences from corresponding parts of the sequence portions in the coding pattern.

7. The method of claim 6, wherein the sequence portions also code at least part of a position value which defines a serial number of the sequence portion.

8. The method of claim 1, wherein the non-sequential data comprises characters and wherein the characters are converted into data values.

9. The method of claim 1, wherein the non-sequential product comprises at least one of the following: a sheet of paper, a book cover, a page of a book, a magazine cover, a magazine page, a newspaper page, and a bulletin board.

10. A system for the storage of non-sequential data, comprising:  
a component for coding the non-sequential data to a coding pattern, the coding pattern comprising at least one sequence with symbols which have the characteristic that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines the position of the subsequence in the sequence; and  
a component for reproducing the coding pattern on a product.

11. The system of claim 10 further comprising:  
a component for converting the non-sequential data into a set of data values having a pattern arranged so as to comprise sequence portions of said at least one sequence in a coding pattern, said sequence portions being at least of the same magnitude as the subsequences of a predetermined magnitude, so that each of the data values is coded by a group each of at least two sequence portions in the coding pattern.

12. The system of claim 11, wherein the non-sequential data is coded with only one sequence, wherein a position of a subsequence in the sequences constitutes a sequence value, and wherein a relationship between the sequence values from different sequence portions defines the data values.

13. The system of claim 12, wherein each of the data values is defined by a difference between the sequence values for two subsequences from different sequence portions.

14. The system of claim 13, wherein the sequence portions are juxtaposed in the coding pattern comprising a matrix in such manner that each of the data values is defined by a difference between the sequence values of two adjoining subsequences from corresponding parts of the sequence portions in the coding pattern.

15. The system of claim 14, wherein the sequence portions also code at least part of a position value which defines a serial number of the sequence portion.

16. The system of claim 10, wherein the non-sequential data comprises characters and wherein the characters are converted into data values.

17. The system of claim 10, wherein the product comprises at least one of the following: a sheet of paper, a book cover, a page of a book, a magazine cover, a magazine page, a newspaper page, and a bulletin board.

18. A system for storing non-sequential data, comprising:  
a product; and

a coding pattern placed on the product in which the non-sequential data is stored, the coding pattern including sequence portions with symbols, each sequence portion including at least a subsequence of a sequence which is arranged so that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines a position of the subsequence in the sequence.

19. The system of claim 18, wherein the coding pattern codes a set of data values, each of the data values coding a group of sequence portions consisting of at least two sequence portions.

20. The system of claim 18, wherein the symbols consist of markings, the size of the markings defining a value of the symbol.

21. The system of claim 18, wherein each of the symbols comprises a raster point and a marking, the value of each symbol being indicated by a position of said marking in relation to the raster point.

22. The system of claim 18, wherein the product comprises at least one of the following: a sheet of paper, a book cover, a page of a book, a magazine cover, a magazine page, a newspaper page, and a bulletin board.

23. The system of claim 18, wherein the coding pattern codes text.

24. The system of claim 18, wherein the coding pattern codes a command.

25. An apparatus for optically recording information, comprising:  
an image sensor adapted to optically record an image from a surface; and  
a processor configured to convert the image into data, the image comprising a predetermined number of subsequences with symbols, each of the subsequences unambiguously corresponding to a position in a predetermined sequence which is arranged in such manner that an arbitrary subsequence of a predetermined magnitude unambiguously defines a position in the sequence.

26. The apparatus of claim 25, further comprising a display adapted to show the data.

27. The apparatus of claim 25, further comprising a loudspeaker adapted to transmit sounds corresponding to the data.

28. The apparatus of claim 25, wherein the processor is further configured to convert the symbols into subsequences with values, to convert the subsequences with values into sequence values, to calculate difference values as the difference between the sequence values, to convert the difference values into data values, and to convert the data values into data.

29. The apparatus of claim 28, wherein at least one of the difference values is used to determine relative positions of the subsequences.

30. The apparatus of claim 29, wherein the relative position of the subsequences is used to decide whether data corresponding to a data value has been previously recorded.

31. A coding pattern data structure for storage of text, comprising:  
a plurality of symbols;  
a sequence portion comprising the plurality of symbols, each sequence portion comprising at least a subsequence of a sequence which is arranged in such manner that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines the position of the subsequence in the sequence; and  
a coding pattern including at least one sequence portion.

32. The coding pattern data structure of claim 31, wherein each of the symbols includes a raster point and a marking, a value of each symbol being indicated by a position of said marking in relation to the raster point.

33. A system for processing optical information, the system comprising:  
a memory for storing computer-executable instructions; and  
a processor functionally coupled to the memory for executing the computer-executable instructions operable for:

recording an input signal corresponding to an image, the image comprising a predetermined number of subsequences with symbols, each of the subsequences unambiguously corresponding to a position in a predetermined sequence which is arranged in such manner that an arbitrary subsequence of a predetermined magnitude unambiguously defines a position in the sequence, and

converting the predetermined number of subsequences into data.

34. The system of claim 33, wherein the computer-executable instructions cause the data to be presented on a display unit.

35. The system of claim 33, further comprising a loudspeaker adapted to transmit sounds corresponding to the data.

36. A computer-readable memory medium, having computer-executable modules, comprising:

a component for recording an input signal corresponding to an image including a predetermined number of subsequences with symbols; and

a component for converting the predetermined number of subsequences into data such that each of the subsequences unambiguously corresponding to a position in a predetermined sequence which is arranged in such manner that an arbitrary subsequence of a predetermined magnitude unambiguously defines a position in the sequence.

37. The computer-readable memory medium of claim 36, wherein a program causes a computer to output a signal to a display unit for presentation of the data.



38. A method for storage of non-sequential data, comprising:

using a coding pattern for storage of text, said coding pattern consisting of sequence portions with symbols which each include at least a subsequence of a sequence which is arranged in such manner that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines the position of the subsequence in the sequence.

39. A method for storage of non-sequential data, comprising:

converting the non-sequential data into a set of data values;

coding the non-sequential data coding the data values to a coding pattern by means of at least one sequence with symbols, such that an arbitrary subsequence of a predetermined magnitude of the sequence unambiguously defines a position of the subsequence in the sequence, the pattern being arranged so as to comprise sequence portions of said at least one sequence in a coding pattern, said sequence portions being at least of the same magnitude as the subsequences of a predetermined magnitude, wherein the sequence portions also code at least part of a position value which defines a serial number of the sequence portion; and

reproducing the coding pattern on a product.

40. A method for storage of data, comprising:

coding the data to a coding pattern, the coding pattern including at least one sequence with symbols which have the characteristic that an arbitrary subsequence of

a predetermined magnitude of the sequence unambiguously defines a position of the subsequence in the sequence; and

reproducing the coding pattern on a product.